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TWO NEW SPECIES OF *CYCAS* FROM NORTHERN AUSTRALIA

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Abstract

Two new species of *Cycas*, namely *Cycas calcicola* and *C. pruinosa*, are described from the Northern Territory and Western Australia respectively. These species are allied to *C. revoluta* Thunb. of Japan and *C. cairnsiana* F. Muell. of Queensland; all four species have pinnae with a distinctly revolute margin.

1. *Cycas calcicola* Maconochie, sp. nov.

Frutex habitu palmae ad 3 m altus, caudice 17-30 cm diam. Frondes atrovirides, in sectione transversali appanata vel arcuata 60-115 cm (plerumque 80-90 cm) longa, 9-27 cm (plerumque 15-20 cm) lata. *Pinnae* 150-300 (plerumque 220-280) lineares rectae vel leviter curvatae, apice attenuatae ad mucronatae spina terminali c. 1 mm longa, margine revolutae, basi non decurrentes, 8-12 cm longae, 2.5-3 cm (interdum 4 mm) latae, supra glabrae vel pubescentes, infra tantum ad canales pubescentes. *Rhachis* prope basin teres ad tetragona, c. 10 mm lata, basi 8 mm crassa sed prope apicem 2 mm crassa, glabra ad furfuracea ferrugineaque. *Conus masculinus* anguste ovoideus, 17-26 cm longus, 5-6 cm latus; microsporophyllum deltoideum, 15-25 mm longum, basi 5 mm latum, ad apicem 12 mm latum, parte terminali 6-10 mm longa, cinereo-pubescentii apice uncatu. *Megasporophyllum* ferrugineum, ad 15 cm longum, apice sterili elliptico-rhombeo spina leviter evoluta 10-17 mm longa; pars apicalis sterilis 20-25 mm longa, 8-11 mm lata, margine dentibus 7-8 papyraceis munita vel inermis, supra glabra pagina brunneo-viridia marmorata papyracea vel siccata resinata, infra pube ferruginea. *Megasporae* 2-6 pro sporophyllo, globosae, brunneae; parum glaucae c. 32-35 mm longae, 25-27 mm diametro.

Holotypus: J.R. Maconochie 1314, 16 km N. of Katherine, N.T., 10.vi.1971 (NT); female plant, two sheets.

Isotypi: BRI, CANB, K, L, PERTH.

Palm-like *shrub* to 3 m high, trunk about 17-30 cm diameter. Fronds dark-green, flattened or arcuate in cross section, (60-)80-90(-115) cm long, (9-)15-20 (-27) cm wide. Leaflets or pinnae (150-)200-280(-300) in number with revolute margins, glabrous or pubescent above, pubescent in channels below. *Pinnae* 8-12 cm long, 2.5-3 mm occasionally 4 mm wide, straight to slightly curved, apex attenuate to mucronate with a small spine 1 mm long, slightly angled on the rhachis, not decurrent on the rhachis. *Rhachis* (including petiole) round to tetragonal towards the base, about 10 mm wide and 8 mm thick at base to 2 mm wide near tip, glabrous to scurfy-ferruginous. *Male cone* narrow-ovoid, 17-26 cm long and 5-6 cm wide, microsporophyll deltoid 15-25 mm long, 5 mm and 12 mm wide at base and apex respectively, with the terminal portion 6-10 mm long, grey-pubescent with a hooked tip in the same plane. *Megasporophyll* ferruginous to 15 cm long, with elliptic-rhombic sterile apex and a weakly developed spine 10-16 mm long. Sterile apical region 20-25 mm long, 8-11 mm broad with 7-8 fine papery marginal teeth or entire, lower surface ferruginous-pubescent, upper surface glabrous with a mottled brown-green papery or dried resinous surface. *Megaspores* 2 to 6 per sporophyll, globular-ovoid, brown in colour, surface slightly glaucous, about 32-35 mm long and 25-27 mm in diameter (Fig. 1).

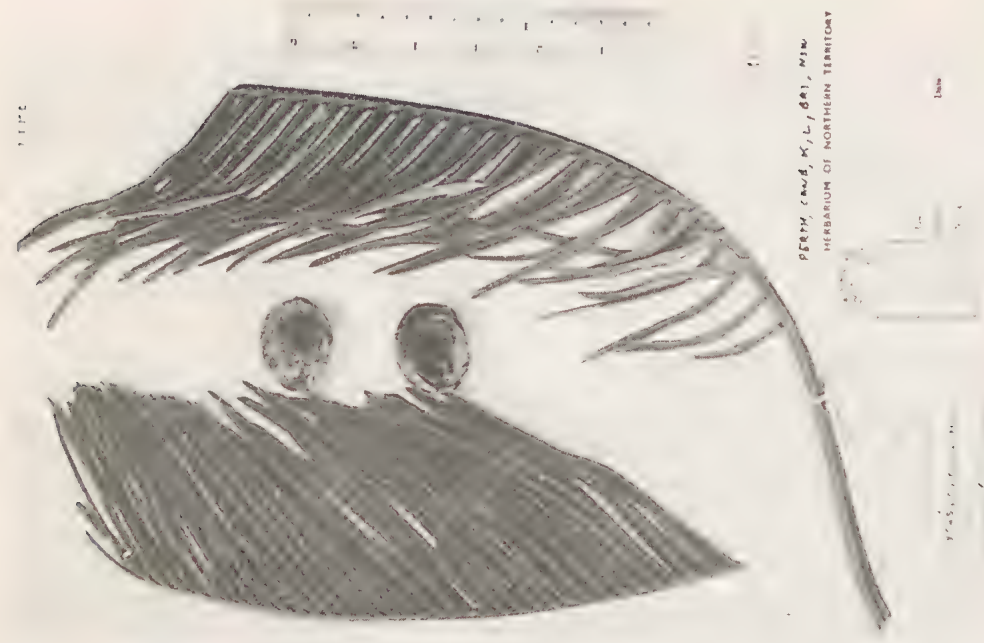


Fig. 2. *Cycas pruinos* Maconochie, holotype, (*Symon s.n., NT*).

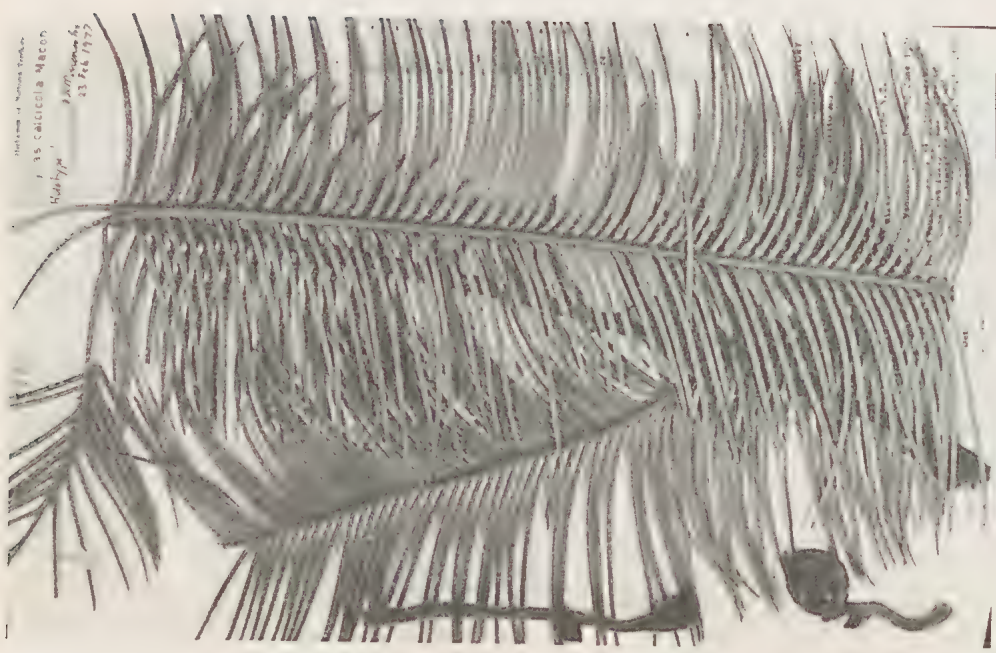


Fig. 1. *Cycas calcicola* Maconochie, holotype, (*Maconochie 1314, NT*).

Selected specimens

NORTHERN TERRITORY: *M. Lazarides* 6624, 13 km N.W. of low level crossing at Katherine, 9.vii. 1961 (CANB, K); 7650, East Alligator River, 12°47'S, 133°21'E, 18.vii. 1972 (BRI, CANB, DNA, K, US); *J.R. Maconochie* 967, 20 km N. of Katherine, 7.ix.1970 (NT); 1315, 16 km N. of Katherine, 10.vi.1971 (BRI, CANB, K, L, NSW); 2070, Bamboo Creek, Mandora road, 13°00'S, 130°45'E, 16.v.1975 (L, NT, NSW, PERTH).

The specific epithet is derived from the most common habitat of this plant, namely, near or around limestone outcrops. *C. calcicola* appears to be restricted to the Northern Territory, being most common in the limestone outcrop areas north of Katherine. Two other isolated populations occur, one at Bamboo Creek on the Mandora road south of Darwin and the other on the East Alligator River.

2. *Cycas pruinosa* Maconochie, sp. nov.

Frutex habitu palmae ad 2 m altus, caudice 25-40 cm diam. Folia viridia U-vel V-formia in sectione transversali, longitudinaliter recta vel leviter curvata, 90-100 cm longa, 16-36 cm lata. *Pinnae* 120-240, lineares utrinque glabro apice attenuatae, mucrone 2 mm longo, margine revolutae, basi non decurrentes, 11-20 cm longae, 2-4 cm latae, apicem versus curvatae et interdum tortae. *Rhachis* tetragono-applanata, 11 mm lata, infra in sicco canalibus duobus utroque costae latere. *Conus masculinus* anguste deltoideus, 38-50 cm longus, 9 cm latus; microsporophyllum deltoideum 15-20 mm longum, basi 5 mm latum, in medio 15 mm latum, appendice terminali 8-15 mm longa caeruleo-cinerea pubescenti deflexa apice sursum flexa. *Megasporophyllum* ferrugineum, 27-30 cm longum, pars apicalis 14-15 cm longa dentibus 20-30 ad 25 mm longis 3-4 mm latis pinnato-dentata, apice 30-70 mm longa. *Megasporae* plerumque 4 pro sporophyllo brunneae ad dilute caeruleae, globosae, c. 40 cm longae, 30-35 mm diam. pruina cinereo-alba.

Holotypus: *D. Symon s.n.*, Ternonis Gorge, Durack Ranges, Western Australia (17°25'S, 127°20'E), June 1975 (NT); female plant, three sheets.

Isotypi: BRI, CANB, K, L, NSW, PERTH.

Shrub to 2 m high, trunk 25-40 cm in diameter. Fronds grey-green, U- or V-shaped in cross-section, longitudinally straight to slightly curved, 90-100 cm long, 16-36 cm wide. *Pinnae* 120-240, with revolute margins, glabrous above and below, 11-20 cm long, 2-4 mm wide, apex attenuate with a pointed tip 2 mm long, pinnae acutely angled on the rhachis, curved forward, occasionally twisted towards the apex, not decurrent on the rhachis. *Rhachis* (including petiole) tetragonal-flattened, glabrous, 11 mm wide, when dry having two channels below on either side of the main vein. *Male cone* narrow-deltoid 38-50 cm long, 9 cm wide, microsporophyll deltoid 15-20 mm long, 5 mm and 15 mm wide at base and middle respectively with an equally long (8-15 mm) terminal blue-grey pubescent appendage, directed downwards but upturned at the tip. *Megasporophyll* ferruginous, 27-30 cm long with terminal part 14-15 cm, pinnate-dentate, 20-30 teeth up to 25 mm long, 3-4 mm wide, terminal tip 30-70 mm long. *Megasporae* mostly 4 per sporophyll, brown to bluish, globular-ovoid, about 40 mm long, 30-35 mm diameter, surface grey-white pruinose (Fig. 2).

Selected specimens

WESTERN AUSTRALIA: *R.A. Perry* 3073, the Grotto, Carr Boyd Range, Kununurra, 26.vii.1952 (CANB, NT); *E.C.B. Langfield* 312, Ivanhoe Station (CANB); *J.R. Maconochie* 1127, Middle Spring, Deception Ranges, 20.v.1971 (CANB, BRI, K, PERTH).

The specific epithet is derived from the pruinose surface of the megaspores.

Cycas pruinosa differs from *C. calcicola* in the absence of indumentum in the channels on the undersurface of the pinnae, in the U- to V-shaped versus flattened-arcuate cross-section of the frond, in the more flattened rhachis and in the size and shape of megasporophyll. *C. pruinosa* is restricted to the ranges west and south of the Kununurra-Ord River area of Western Australia. It is found mostly on hill slopes and at bases of steep cliffs.

Partial key to Australian *Cycas* species

1. Pinnae with revolute margins, 2-3(-4) mm wide
 2. Pinnae pubescent, or if glabrous above then pubescent in channels below, 2-3 mm wide *C. calcicola* (N.T.)
 2. Pinnae glabrous above and below
 3. Megasporophyll long (280-320 mm), ferruginous, with large well developed teeth (pinnatifid); pinnae 2-3 mm wide *C. pruinosa* (W.A.)
 3. Megasporophyll short (180-210 mm), ferruginous, teeth weakly developed or none; pinnae 3-4 mm wide *C. cairnsiana* (Qld)
1. Pinnae with flat margins, 2-3-4 mm wide *C. media* and allies

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